An essay

on

The heart and its diseases.

Respectfully submitted to the Faculty

of the

Homeopathic Medical College

of

Pennsylvania.

on the first day of February

one thousand eight hundred and fifty seven.

by

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The study of the heart and its diseases, is one of deep interest to the searcher after medical knowledge.

The consideration of disease, in any part or number of the body is important, in proportion to its extent, to the discomfort to which it subjects the individual, and to its tendency to shorten life. When vital organs become involved, the danger is more imminent and hence their consideration of more importance

and of deepr interest.

The heart is the centre of life. upon the proper performance of its functions, depend all the different tissues and parts of the body. for nutriment and life. If from some cause the supply of blood is cut off from a distant member, death of that part speedily ensues. and so if the heart ceases its action. death. is the result to the entire system.

It is not many years since diseases of the heart were deemed to be of very rare occurrence. but now with the light of the present day. they are known to be of very common occurrence, and many diseases which were

supposed to result from the derangement of other viscera. are known to be entirely supernatant upon an abnormal condition of the heart. or some error in the hearts action.

In order to have a proper understanding of the pathological changes to which the heart is subject, it will first be necessary to have a correct understanding of the condition of the organ in a state of health;

As regards; structure. position, size, weight. sounds, and impulse.

The heart in structure is an irregular hollow muscle containing four cavities. the

two superior the auricles the two inferior the ventricles, called right and left respectively from their position in the thorax. The auricles receive the blood from the body and lungs and pour it into the ventricles which send it to the lungs and to all parts of the body.

The right auricle and ventricle are in foetal life separated from the left auricle and ventricle by the "septum cordis" making two distinct hearts. The first two form the pulmonic, right or anterior heart. The right auricle receives the venous blood from the entire system through the superior

and inferior venae cavae and the coronary vein. it passes thru through the auriculo ventricular opening into the ventricle. and from thence through the pulmonary artery to the lungs. to be aerated. the four pulmonic veins then receive it and pour it into the left auricle. from thence it passes to the ventricle. and is sent through the entire system. the left auricle and ventricle form the systemic or left heart.

cavae

Separating these cavities and guarding the orifices of communication with the pulmonary artery and aorta are four sets of valves. the consideration

a

of which is of great importance,

The tricuspid valve separate a
the right auricle from the ventricle, and serve to prevent a return of the blood during the contraction of the ventricle, attached to them are strong tendinous fibres the chordæ tendineæ, which assist in holding the valves during the contraction of the ventricle. The semilunar valves at the entrance of the pulmonary artery are three folds of the membrane lining the cavity of the heart. Their office is to prevent the return of the blood to the ventricle.

The mitral valves attached around the left auriculo-ven-

ventricular opening consist of two segments which shut closely during the contraction of the left ventricle. The chordae tendineae attached to their borders and surfaces are much stronger than those in the right ventricle inasmuch as the contractions of this ventricle are the stronger.

These valves shut so closely upon themselves as to entirely prevent a return of the blood to the auricle. This is not always the case with the tricuspids which are said at times to act as safety valves permitting a slight return of blood when some obstruction exists in the lungs or pulmonary

arteries. The mitral valves should particularly engage our attention, inasmuch as they are more likely to become diseased than any of the others. Though may be the next valves which we shall consider, will equally demand our attention.

The blood as it passes from the left ventricle and during its contraction is prevented from returning by the semilunar valves corresponding to the valves of the same name at the entrance of the pulmonary artery, are formed by a folding of the lining membrane.

The heart is invested by a fibro serous membrane. The

pericardium. the serous portion
a reflection from the serous cover-
ing of the heart itself. it con-
tains usually a small quantity
of serum varying from one and
a half to two and one half or
three ounces. this serum serves
to facilitate the motions of the
heart. the lining membrane
of the heart the endocardium is
a fibro serous membrane and
is in character like other serous
membranes. and is interesting
as a subject of investigation on
account of its susceptibility to
disease.

the walls of the heart
in thickness vary in its different
parts. the left ventricle being

much thicker than the right as two to five, or one to three, the left auricle to the right as two to three, and under the influence of disease are subject to great changes.

The heart enclosed in the pericardium is suspended in the thorax its base pointing to the right shoulder its apex to the left side, its greatest bulk upon the left of the median line, it extends to the fifth dorsal vertebra superiorly, and to the ninth dorsal vertebra inferiorly is bounded superiorly by the great vessels, inferiorly by the diaphragm with which it is in contact, on either side by

the lungs which partially overlap, leaving a small triangular space uncovered under the cartilages of the fourth and fifth ribs on the left side. In certain affections of the lungs and pleura this also becomes an important diagnostic mark.

The position of the heart with reference to the anterior wall of the chest is a matter of much practical interest, and also of great importance in diagnosing diseases of the thoracic viscera. The base of the ventricles corresponds with the middle of the third rib, the apex in the space between the fifth and sixth ribs two or three inches from the ster-

ums. — or an inch or more inside the left nipple. Its right border by some authors is said to extend only to the edge of the sternum, while others say to an inch or more beyond it. Its left border extends quite to the left nipple —

In size the heart has been compared by Laennec to the fist of the individual, this probably is the simplest method of comparison, yet not accurate in all cases. Bizot has given an elaborate method of measurement, which is much more accurate and is of value in diagnosing diseases of the heart though it seems to have its

greatest value in the post mortem examination. From his researches we learn that the heart increases in size as age advances. That it is larger in the male than in the female, and that breadth of chest gives an increased size of heart.

Other methods are given. One is, the sensations expressed upon placing the hand over the precordial region, or by the stethoscope, judging of its size from its impulse the impulse is felt over the heart itself. and is a measure of its size. The impulse or shock ceases to be felt the instant you lean the region of the heart. Another method is by percussion. From these various methods the following

measurement has been obtained, four diameters are given the sum of which is seventeen inches in the male and sixteen in the female.

The area over which the impulse of the heart may be felt will be quite evident if the position of the heart is borne in mind. This knowledge is of incalculable advantage, in diagnosing not only diseases of the heart, but of the lungs and pleura by which the heart may be moved from its natural position. It also discerns to us the abnormal action of the heart inasmuch as under diseased action the impulse is felt over much greater area.

The sounds of the heart are two in number. In the healthy heart

at the same time of the impulse or when the apex strikes the chest we have the first or systolic sound so called because it happens during the contraction of the ventricles. The other sound coincides to the diastole, and hence is called the diastolic sound

The time of the occurrence of these sounds and the silence that follows has been divided by different writers in different ways. The simplest of which, is that when the two sounds are given, two for the first sound which is dull and prolonged, one for the second which is short and quick, and the remaining two for the period of silence which follows. Thus sounds and silence form the

rhythm of the heart, a pursuit?
of the rhythm evidences irregularity
of action of the heart.

It is not my purpose to enquire
into the causes which produce these
thin sounds but rather of the causes
which produce irregularity in them.

The might of the heart is
from five to six or eight ounces.
Some years ago I remember of wit-
nessing a post mortem examination
in the case of a man about thirty
five years of age whose heart weighed
only about three ounces. This disease
was of such a character, and from
the fact that no other viscera was
abnormal, it was thought to be
owing to the smallness of his heart.
For years prior to his death his

life was miserable in the extreme
a scene of fears and doubts.-

The impulse is the stroke the
heart gives to the parietes of the chest,
and may be felt by placing the
hand on the precordial region -
the distinctness with which it is felt
is subject to variations from the posi-
tion of the person. the condition
and position of the lungs, the
amt of fat &c. This sensation
in the healthy heart is that of a
quick, smart, shock - In hypertrophy
of the ventricles it becomes stronger
and the sensation extends over a
much greater area, and is a strong
heaving swell, is sometimes com-
municated to the clothing of the
person and is visible to the bystander

This may also result from excitement, but then its characteristic is its rapidity and sharpness.

Having endeavored to give briefly a description of the heart in its healthy normal state, as regards its position structure and sounds I will now endeavor to as briefly describe some of the deviations from the normal state, and some of the diseases to which it is subject.

If a proper knowledge is had of the heart in its healthy condition and of the normal performance of its functions, an appreciation of the physical signs whereby we may detect disease is a matter of comparative ease.

From the two functions

position of the heart in the thorax, its attachments at its base is in such a manner as to permit much motion; it is very liable to displacement. Its position may be very materially altered and yet if no pressure exists to prevent its action the circulation will not be impeded and the sound will be natural, with the exception of position and the influence exerted by the tissues that may interfere.

The causes of such displacement are by no means rare. Certain kinds of turnips confining the body in an unnatural position. Enlargement of liver and other abdominal viscera from an emphysematous condition of the cavity of the abdomen - forcing the diaphragm upwards, or a like

condition of one lung, or partial or
Entire atrophy of one lung - from
large quantities of water in the pleural
sac - from ascites and abdominal tumors.

The normal sounds are altered
and morbid sounds induced by dif-
ferent diseased conditions, a bel-
lows sound accompanies, and may
take the place of the normal sounds
when one or more of the orifices
are narrowed, or enlarged by dis-
ease, and when the orifices retain
their natural dimensions, but the
quantity of blood passing through
them is in much greater quantity
than natural, also the anaemic
and chlorotic condition, when the
blood is unnaturally thin has in
some instances given rise to this sound -

persons of a particularly nervous temperament, when undergoing great excitement, or after violent exercise may have this sound, though it may be easily distinguished from that of organic disease of the valves by the much greater rapidity of the hearts action, by the flushing of the face and the quick humid pulse.

This sound may be modified by the condition of the orifices through which the blood passes, or rather by the condition of the valvular surfaces, by the quantity of blood and the condition of the walls of the heart, rendering it louder harsher and hoarser, or more indistinct. Three different conditions have given this name

of murmurs to these diffent sounds or conditions of sound. a rushing, blowing, sound is caused by the change of the mitral valves from their flapping valves, to a rigid surveying apparatus. by the deposits of osseus matter, or otherwise. the sound produced by the blood passing from the auricle to the ventricle while this individual is termed the diastolic bellows murmur - and if a regurgitation of the blood takes place, during the contraction of the ventricle, we have the sound called the systolic murmur. By distinguishing between these murmurs, we are enabled to tell which of the valves are the subjects of dis

dase. Thre is still an other morbid sound, which in connection with a slight thrill felt by placing the hand over the heart, is called the "Fricton sound." and is caused by the rubbing together of the surfaces of the pericardium, made rough by a coating of lymph. Thre different sounds may be single or double.

Dyspnoea is as a general thing attendant upon diseases of the heart both functional and organic, and is owing in a great measure to engorgment or congestion of the lungs.

Permanent dyspnoea is produced by organic disease of the valves

as
this symptom is found in dis- as
eased conditions of the lungs
and pleura. ~~and~~ the diagnosis
sometimes becomes difficult.

Accelaration of pulse is usually a
symptom of heart disease - also
an irregular intermitting pulse,
however these are by no means
diagnostic symptoms,

When effusion of serum into
the pericardium takes place
and in enlargement of the heart
dilatation of the cavities walls
and a fluctuation may be seen,

Pain in the region of the heart
is usually an attendant symptom
in heart disease, both organic and
functional, may be the result
of inflamation, or located in m

the nerves supplying the heart. or in the intercostal nerves. when this later is the case - great sensitiveness to touch is experienced -

When commencing this article it was not my intention to have dwelt so long upon the anatomy of the heart and upon its general pathology, but having done so it leaves me but little space for special pathology. and hence I must hurry over the remainder of the subject.

The pericardium is subject to inflamation. which is much of the character of inflamation in other serous membranes -

The first effect of inflamation is to make the membrane dry

and change the character of serum to a thick glue like substance, this is followed by an increased secretion of serum which fills up the cavity and pushes the heart from its normal position back towards the spine. An effusion of lymph may take place, and the heart thus becomes glued or adherent to the pericardium.

Pericarditis may be idiopathic or arise from cold or exposure, but most frequently is found in connection with acute rheumatism. It has been thought to be a metastasis from the joints. In some instances this may be the case, but in the greater number we find no diminution in the

inflamation of the joints. and in many instances the inflamation commences in the pericardium and extends to the joints, or at the same time in both. These facts lead me to think that inflamation of the pericardium of the rheumatic character. and articular rheumatism are dependent upon the same cause. The post mortem examination of the pericardium shows. the results of inflamation in other cases membranes. thickenings, and roughness of its surface from the deposite of lymph & discoloration.

The diagnosis is sometimes very obscure. dissection has evidenced the disease in

many cases when it had not been discovered by the physician

The normal sounds are usually very much altered. The physical sounds are ~~disturbed~~ on percussion - and an abrupt impulse when effusion, as lymph is exuded the friction sound becomes manifest - and as effusion progresses this is lost, and all sounds are muffled and indistinct -

When a large quantity of fluid is effused the dullness may extend far up in the chest and give the impression that it is pleuritic effusion. It however may be distinguished from the latter, from the fact that the respiratory sounds will be heard in the back and sides

and will not be much affected by change of position. The make action of a very much enlarged heart may be distinguished from the condition existing in effusion by auscultation in the line of the Carotid or subclavian arteries, or in the fossa above the sternum.

In diagnosing Endocarditis, our chief reliance is upon the physical signs, and inasmuch as the valves of the heart are most obnoxious to disease, we find the the sounds, under inflammation much changed. A deposit of lymph upon the valves, may thicken, glueing them to the walls of the heart or to each other, or they may as a result of inflammation become

thus, form, and are almost ob-
literated - or hardened - partially
or entirely ossified - These dif-
ferent conditions give rise to dif-
ferent sounds - by noticing them
it is not a difficult matter to know
which of the valves are diseased -
The valves of the left heart are the
most obnoxious to disease. From
interruption of the blood in its
passage through the mitral orifice
the ventricle may diminish
in size so in disease of the tricus-
pid valves the right ventricle may
be atrophied. In the obstruction of
the aortic orifice we find a most
frequent cause of hypertrophy and
dilatation of the left ventricle. a
like result in the case of the right

which is found in diseases of the semilunar valves at the orifice of the pulmonary artery.

Endocarditis is characterized by louder sounds and an increase of the impulse. As inflammation progresses the first sound is much increased in length and becomes changed to a rough blowing sound caused by interruption of the flow of the blood. When the mitral valve is the seat of the inflammation the pulse is not synchronous with the hearts action.

The causes of acute endocarditis are much the same as those of pericarditis. and the disease is most frequently found in connection with rheumatism. If the inflamation

is not subdued. chronic endocarditis is like to be the result - and then we have the incurable hardning or ossification of the valves

Angina Pectoris considered as a disease of the heart is probably dependent upon ossification of the coronary arteries which are given off from the aortic semilunar, and which give nourishment to the heart. It occurs in spasms. is characterised by violent pains over the heart extending to the arms - great anxiety - dyspnoea - sense of suffocation - In the early stages of the disease these paroxysms are brought on by exercise, in the later stages by mental emotions, improper articles of diet. and finally with out any apparent cause During the par-

oxyems the pulse is usually slow feble and intermittent. The diagnosis is by no means difficult.

The substance of the heart is obnoxious to disease. When the seat of extensive inflamation the most violent symptoms are witnessed. It not easily distinguished from inflamation of the investing membrane. It is a disease of rare occurance. when not complicated with pericarditis or endocarditis; When extensive inflamation of the heart does take place. the prognosis is very unfavorable.

In the selection of a subject for a thesis, one could scarcely have been chosen. the proper consideration of which would demand more time and space than that which heads this article.

In my brief and may be in many regards imperfect sketch of the heart and its diseases, I have been compelled to omit much, which in my mind seems of great importance. It would have given me pleasure to have spoken of the wonderful power our homeopathic remedies possess in controlling and curing the diseases of the heart. For in the treatment of these diseases we have some of the strongest evidences of the efficacy of the application of remedies in accordance with the law "Similia Similibus Curantur" but that is a subject for a lengthy article in its self-